

REMARKS

Applicants appreciate the Examiner's thorough examination of the application and request reexamination and reconsideration of the application in view of the following remarks.

In the Office Action dated July 10, 2009, the Examiner rejected claims 1 and 37-71 under 35 U.S.C. § 112, second paragraph. The Examiner also rejected claims 1, 37-40, 43-54, 56, 58, 60-62, 65 and 68-71 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1); claims 1, 37-56, 58-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1); claims 1, 37-56, 58-63 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Rey (U.S. Patent No. 4,497,764); claims 1, 37-56 and 58-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Tokunaga et al. (U.S. Patent No. 5,985,455); claims 1, 37-56, 58-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Araki et al. (U.S. Patent No. 6,726,994); claims 1, 37-40, 43-54, 56, 59-61, 65 and 68-71 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over DE 29 17 856; and claims 1, 37-41, 43-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over DE 29 17 856 in view of Araki et al. (U.S. Patent No. 6,726,994).

As Applicants' remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicants' silence as to assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, motivation to combine references, assertions as to dependent claims, etc.) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such assertions/requirements in the future. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

Through the above amendments, Applicants have amended claims 1, 37, 45, 48, 66 and 67 to clarify the claims, and cancelled claim 65. No new matter has been added through the above amendments. Accordingly, claims 1, 37-64 and 66-71 remain pending in the subject application.

Claim Rejections – 35 U.S.C. § 112

The Examiner rejected claims 1 and 37-71 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner alleged that improper Markush language was used in claim 1, and that claim 48 included indefinite language.

Applicants have amended claim 1 to include proper Markush language. Additionally, Applicants have amended claim 48 to remove any indefiniteness. Support for the amendment to claim 48 can be found, for example, in paragraphs [0023] and [0024]. Accordingly, the § 112 rejections have been overcome.

Claim Rejections – 35 U.S.C. §§ 102 and 103

I. The Examiner rejected claims 1, 37-40, 43-54, 56, 58, 60-62, 65 and 68-71 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1), and also rejected claims 1, 37-56, 58-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1).

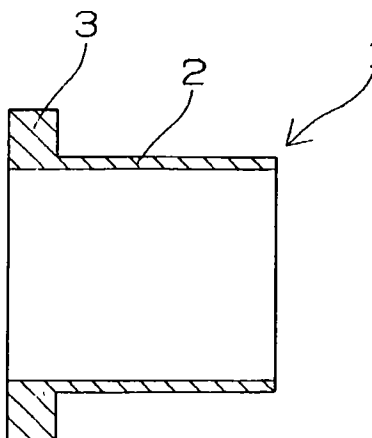
As noted above, claim 65 has been cancelled from the subject application, so the rejection of claim 65 is moot.

To anticipate a claim, the reference must teach every element of the claim. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention

must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 1, as amended, is directed to a plain bearing comprising a strong backing material substrate, the substrate optionally having a layer of a metallic bearing material thereon, the plain bearing having a sliding layer of a polymer-based bearing material thereon, the polymer-based bearing material comprising a polymer-based matrix selected from the group consisting of a modified epoxy resin and a polyimide/amide resin, the matrix resin having contained therein particles of a metal powder in the range from 15 to 30vol% and particles of a fluoropolymer in the range from 1 to 15vol%, and optionally an addition selected from the group consisting of a ceramic powder in the range from 0.5 to 20vol%, and, silica in the range from 2 to 15vol% wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material.

The Examiner alleged that Oohira discloses all of the elements of independent claim 1. However, Oohira fails to disclose the plain bearing having a sliding layer of a polymer-based bearing material thereon, and wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants in amended independent claim 1. Fig. 1 of Oohira is reproduced below:



Oohira is directed to a composition having lubricity and product comprising the composition. Oohira discloses a composition composed by adding a porous silica and a lubricant to a base material, by adding lubricant-impregnated porous silica to the base material, or by adding lubricant

impregnated porous silica and lubricant to the base material. Oohira further discloses a slide bearing 1 having a cylindrical bearing body 2 and a flange 3 mounted on the body 2. The body 2 and the flange 3 are formed by molding the composition. A sleeve 4 and a thrust washer 5 (FIGS. 2 and 3 of Oohira) also have the function of the slide bearing and are also formed by molding the composition. See Paragraph [0089] and the Abstract of Oohira.

As disclosed by Oohira, the slide bearing of Oohira is a monolithic bearing which is formed by molding the composition. The slide bearing of Oohira is fully composed of the composition. However, as noted above, claim 1 includes the features of the plain bearing having a sliding layer of a polymer-based bearing material thereon, and wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material. As Oohira discloses a slide bearing formed by molding the composition, Oohira clearly fails to disclose forming the slide bearing by adhering the composition to a substrate.

The Examiner refers to example 19 of Oohira in asserting that Oohira discloses a base coated with a composition. However, example 19 of Oohira merely discloses coating the end of an aluminum pin with the composition in order to carry out friction and wear tests on the aluminum pin. See Paragraph [0121] of Oohira. This section of Oohira does not disclose coating a substrate with the composition to form a product. This section merely discloses coating a pin with the composition for testing purposes. As noted above, Oohira clearly discloses that the slide bearing of Oohira is formed by molding the composition, not by disposing the composition on a substrate.

Accordingly, Oohira fails to disclose a plain bearing having a sliding layer of a polymer-based bearing material thereon, and wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants. As Oohira fails to disclose each and every element of independent claim 1 of the subject application, independent claim 1, and dependent claims 37-40, 43-54, 56, 58, 60-62 and 68-71 are patentable over Oohira for at least this reason. Moreover, dependent claims 37-40, 43-54, 56, 58, 60-62 and 68-71 each contain additional recitations that are separately patentable as well.

Further, it would not be obvious to modify Oohira to form the slide bearing by adhering the composition of Oohira to a substrate. Oohira discloses that the composition has a lubricity such as a lubricating resinous composition, lubricating elastomer composition, and a lubricating coating film

composition capable of continuously oozing a lubricant to a slide interface little by little. See Paragraph [0001] of Oohira. A self-lubricating composition of the type described by Oohira would prevent such a polymer composition from adhering to a substrate sufficiently strongly to produce a plan bearing of the type contemplated by the claim. Thus, Oohira teaches away from adhering the composition to a substrate. Therefore, as Oohira teaches away from adhering the composition to a substrate, it would not be obvious to modify Oohira to include a polymer-based bearing material adhered directly to a substrate by the adhesive properties of the matrix material as claimed by Applicants.

Accordingly, independent claim 1, and dependent claims 37-56, 58-62 and 66-71, are patentable over Oohira for at least the additional reason that Oohira teaches away from a plain bearing having a sliding layer of a polymer-based bearing material thereon, and wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants. Moreover, dependent claims 37-56, 58-62 and 66-71 each contain additional recitations that are separately patentable as well.

II. The Examiner rejected claims 1, 37-56, 58-63 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Rey (U.S. Patent No. 4,497,764).

As noted above, Oohira fails to disclose, and in fact teaches away from, a plain bearing having a sliding layer of a polymer-based bearing material thereon, and wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants. Rey is directed to an epoxy resin grout having improved resistance to creep deformation while retaining its resistance to adverse chemical and/or elevated temperature environments while retaining resistance to abrasion. See the Abstract of Rey and col 2, lines 17-21 of Rey. However, Rey fails to disclose that the epoxy resin grout is adhered directly to a substrate by the adhesive properties of the material as claimed by Applicants. Accordingly, both Oohira and Rey both fail to disclose a plain bearing having a sliding layer of a polymer-based bearing material thereon, wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants. Therefore, the combination of references fails to disclose each and every element of independent claim 1.

Additionally, as noted above, the composition of Oohira has a lubricity such as a low degree of friction and wear and is capable of supplying a lubricant continuously to the surface of a slide surface. See the Abstract of Oohira. Rey discloses an epoxy resin grout having improved resistance to creep deformation while retaining its resistance to adverse chemical and/or elevated temperature environments while retaining resistance to abrasion. Rey does not disclose that the epoxy resin grout includes any lubricating properties, or that the epoxy resin provides a low degree of friction. As the epoxy resin grout of Rey does not include any lubricating or reduced friction properties, the epoxy resin grout is non-analogous to the composition of Oohira, and it would not be obvious to look towards Rey to modify the composition of Oohira. Therefore, the combination of references is improper for at least this reason.

Accordingly, independent claim 1, and dependent claims 37-56, 58-63 and 66-71, are patentable over the cited references for at least the above reasons. Moreover, dependent claims 37-56, 58-63 and 66-71 each contain additional recitations that are separately patentable as well.

III. The Examiner rejected claims 1, 37-56 and 58-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Tokunaga et al. (U.S. Patent No. 5,985,455).

As noted above, Oohira fails to disclose, and in fact teaches away from, adhering the composition to a substrate. Tokunaga is directed to a semiconductor element sealed with an epoxy resin compound. The semiconductor element of Tokunaga is sealed with the epoxy resin to provide improved reliability at high temperature and humidity and good resistance to soldering heat. See col 1, lines 14-22 of Tokunaga. However, Tokunaga fails to disclose that the material is adhered directly to a substrate by the adhesive properties of the material as claimed by Applicants. Indeed, Tokunaga fails to disclose that the epoxy resin has any adhesive properties whatsoever. Accordingly, both Oohira and Tokunaga both fail to disclose wherein the polymer-based bearing material is adhered directly to the substrate by the adhesive properties of the matrix material as claimed by Applicants. Therefore, the combination of references fails to disclose each and every element of independent claim 1.

Additionally, as noted above, the composition of Oohira has a lubricity such as a low degree of friction and wear and is capable of supplying a lubricant continuously to the surface of a slide

surface. See the Abstract of Oohira. Tokunaga discloses an epoxy resin to provide improved reliability at high temperature and humidity and good resistance to soldering heat. Tokunaga does not disclose that the epoxy resin includes any lubricating properties, or that the epoxy resin provides a low degree of friction. As the epoxy resin of Tokunaga does not include any lubricating or reduced friction properties, the epoxy resin is non-analogous to the composition of Oohira, and it would not be obvious to look towards Tokunaga to modify the composition of Oohira. Therefore, the combination of references is improper for at least this reason.

Accordingly, independent claim 1, and dependent claims 37-56, 58-64 and 66-71, are patentable over the cited references for at least the above reasons. Moreover, dependent claims 37-56, 58-64 and 66-71 each contain additional recitations that are separately patentable as well.

IV. The Examiner rejected claims 1, 37-56, 58-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over Oohira et al. (U.S. Publication No. 2003/0022797 A1) in view of Araki et al. (U.S. Patent No. 6,726,994).

Araki is directed to a structural member produced by adhering a fluorine-containing polymer to a substrate. The Examiner alleged that Araki discloses metallic substrates for bearings such as metal and aluminum alloy, and that it would have been obvious to modify Oohira to include an aluminum alloy as a base for the bearing of Oohira.

However, as noted above, Oohira fails to disclose, and in fact teaches away from, adhering the composition to a substrate. Modifying Oohira such that the composition is adhered to an aluminum substrate as taught by Araki goes directly against the teachings of Oohira. Therefore, the combination of references is improper for at least this reason.

Accordingly, independent claim 1, and dependent claims 37-56, 58-62 and 66-71, are patentable over the cited references for at least the above reasons. Moreover, dependent claims 37-56, 58-62 and 66-71 each contain additional recitations that are separately patentable as well.

V. The Examiner rejected claims 1, 37-40, 43-54, 56, 59-61, 65 and 68-71 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over DE 29 17 856 (the '856 patent).

The Examiner alleged that the '856 patent discloses all of the elements of independent claim 1, and refers to the English abstract of the '856 patent. However, the '856 patent fails to disclose the

material including “particles of a metal powder in the range from 15 to 30 vol%” as claimed in claim 1.

The English abstract of the ‘856 patent states that the “hydraulically-lubricated plain bearing is of bearing metal with a non-metallic coating to reduce starting friction.” Lines 1-3 of the English abstract of the ‘856 patent (emphasis added). Thus, the ‘856 patent clearly discloses that the coating does not include any metal. Thus, the ‘856 clearly fails to disclose that the coating includes “particles of a metal powder in the range from 15 to 30 vol%” as claimed by Applicants.

Further, as the ‘856 patent specifically states that the coating is a non-metallic coating, the ‘856 patent teaches away from the coating including any metals. Accordingly, it would not be obvious to modify the coating of the ‘856 patent to include any metals.

Accordingly, independent claim 1, and dependent claims 37-40, 43-54, 56, 59-61 and 68-71, are patentable over the ‘856 patent, as the ‘856 patent fails to disclose, and in fact teaches away from, the coating including “particles of a metal powder in the range from 15 to 30 vol%” as claimed by Applicants. Moreover, dependent claims 37-40, 43-54, 56, 59-61 and 68-71 each contain additional recitations that are separately patentable as well.

VI. The Examiner rejected claims 1, 37-41, 43-62 and 65-71 under 35 U.S.C. § 103(a) as obvious over DE 29 17 856 in view of Araki et al. (U.S. Patent No. 6,726,994).

The Examiner alleged that Araki discloses the use of various fillers, including metal powders in a sliding material of a bearing, and that it would have been obvious to modify the ‘856 patent to include the metal fillers as taught by Araki. However, as noted above, the ‘856 patent fails to disclose, and in fact teaches away from, the coating including any metals. Modifying the ‘856 patent such that the coating includes metal fillers as taught by Araki goes directly against the teachings of the ‘856 patent. Therefore, the combination of references is improper for at least this reason.

Accordingly, independent claim 1, and dependent claims 37-41, 43-62 and 66-71, are patentable over the cited references for at least the above reasons. Moreover, dependent claims 37-41, 43-62 and 66-71 each contain additional recitations that are separately patentable as well.

Conclusion

In view of the above amendment and remarks, the pending application is in condition for allowance. If, however, there are any outstanding issues that can be resolved by telephone conference, the Examiner is earnestly encouraged to telephone the undersigned representative.

It is believed no fees are due with this response. However, if any fees are required in connection with the filing of this paper that are not identified in any accompanying transmittal, permission is given to charge our Deposit Account No. 18-0013, under Order No. 66775-0009 from which the undersigned is authorized to draw. To the extent necessary, a petition for extension of time under 37 C.F.R. §1.136 is hereby made, the fee for which should also be charged to this Deposit Account.

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Respectfully submitted,

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